

Fig. 1

Sheet 1 of 16

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METHOD LIST DATA STRUCTURE

200

METHOD DEFINITION

| | |
|----------------------------------|-----|
| Example2.method2_2(int) | 212 |
| Example2.method2_2(String) | 214 |
| Example2.method2_2(char) | 216 |
| Example1.method2_2(char) | 218 |
| Example1.method2_2(long, String) | 220 |
| ⋮ | 222 |

Fig. 2

VARIABLE TYPE LIST DATA STRUCTURE

300

TYPE

| | |
|--------|-----|
| int | 312 |
| String | 314 |
| char | 316 |
| long | 318 |
| ⋮ | 320 |

Fig. 3

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VARIABLE LIST DATA STRUCTURE 400
(AFTER INTERNAL VARIABLES)

VARIABLES

| | |
|--------------------|-----|
| int i | 412 |
| String s3 | 414 |
| String this.s2 | 416 |
| String Example3.s1 | 418 |
| ⋮ | 420 |

Fig. 4

LIST OF CLASSES 500

CLASS NAME

| | |
|--------------------|-----|
| java.lang.String | 512 |
| java.lang.Interger | 514 |
| ⋮ | 516 |
| Example1 | 518 |
| Example2 | 520 |
| Example3 | 522 |
| ⋮ | 524 |

Fig. 5

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VARIABLE LIST DATA STRUCTURE
(AFTER EXTERNAL VARIABLES)

600

VARIABLE

| | |
|--------------------|-----|
| int i | 612 |
| String s3 | 614 |
| String this.s2 | 616 |
| String Example3.s1 | 618 |
| String Example2.s1 | 620 |
| ⋮ | 622 |

Fig. 6

WEIGHTING DATA STRUCTURE

700

ATTRIBUTE

WEIGHT

| | | |
|--------------------------------|-----|-----|
| MOST RECENTLY CREATED/MODIFIED | +30 | 712 |
| LOCAL VARIABLE | +10 | 714 |
| FROM CLASS HEIRARCHY | +5 | 716 |
| EXTERNAL VARIABLE | -5 | 718 |
| USED PREVIOUSLY | -10 | 720 |
| INITIALIZED | -20 | 722 |
| ⋮ | ⋮ | 724 |

Fig. 7

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VARIABLE LIST DATA STRUCTURE
(AFTER RANKING) 800

| VARIABLE 802 | 804 |
|---|---|
| int i | 2 812 |
| String s3 | 45 814 |
| String this.s2 | 22 816 |
| String Example3.s1 | 10 818 |
| String Example2.s1 | 0 820 |
| ⋮ | ⋮ |

Fig. 8

| VARIABLE 902 | RANKING 904 |
|---|--|
| Sting S3 | 90% 914 |
| int i | 90% 916 |
| String this.s2 | 45% 918 |
| String Example3.s1 | 20% 920 |
| String <new> | 5% 921 |
| int # | 5% 922 |
| Char "c" | 5% 924 |
| long # | 5% 926 |
| String Example2.s1 | 1% 928 |

Fig. 9

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10A

```
public String getLibraryName(String line) {  
    int size = line.length()  
    String temp = null;  
    if (size >= 10)  
        temp = line.substring(0,10)  
    else  
        return null;  
    String fileName = this.  
        return (fileName);  
}
```

1001A

1002A

```
begin(void) void  
format (String) String  
getSystemName(String) String  
init(void) void
```

Fig. 10A

10B

```
public String getLibraryName(String line) {  
    int size = line.length()  
    String temp = null;  
    if (size >= 10)  
        temp = line.substring(0, 10)  
    else  
        return null;  
    String fileName = this.format(  
        return (fileName);  
}
```

1001B

1002B

```
String fileName  
String line  
String temp  
String <new>
```

Fig. 10B

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Fig. 11A

```
public class Example1 {  
    public void method2_2(char c) {  
        return;  
    }  
    public void method2_2(long l, String s) { // overloaded method  
        return;  
    }  
}  
  
public class Example2 extends Example1 {  
  
    public static String s1 = "hello"; // class variable  
    public String s2 = "there"; // instance variable  
    public String s3 = "don't touch"; // variable inaccessible externally  
  
    public static void method2_1() { // class method  
        return;  
    }  
    public static void method2_2(int i) { // instance method  
        String s = "jump"; // local variable, instance of the String class  
        Example2.method2_1(); // calling a class method on a class object  
        s.length(); // calling an instance method  
    }  
    public void method2_2(String s) { // overloaded method  
        return;  
    }  
}
```

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```

public void method2_2(char c){ // overloaded and overridden method
    return;
}
}

public class Example3 {
    private static Strig s1 = "class";
    private String s2 = "instance"
    public void method3_1(int i) {
        String s3 = "local";
        Example2 ex2 = new Example2();
        ex2.method2_2( ) 1001C
    }
}

```

1002C

| | |
|-----|--------------------|
| 90% | String s3 |
| 90% | int i |
| 45% | String this.s2 |
| 20% | String Example3.s1 |
| 5% | String <new> |
| 5% | int # |
| 5% | char 'c' |
| 5% | long # |
| 1% | String Example2.s1 |

Fig. 11B

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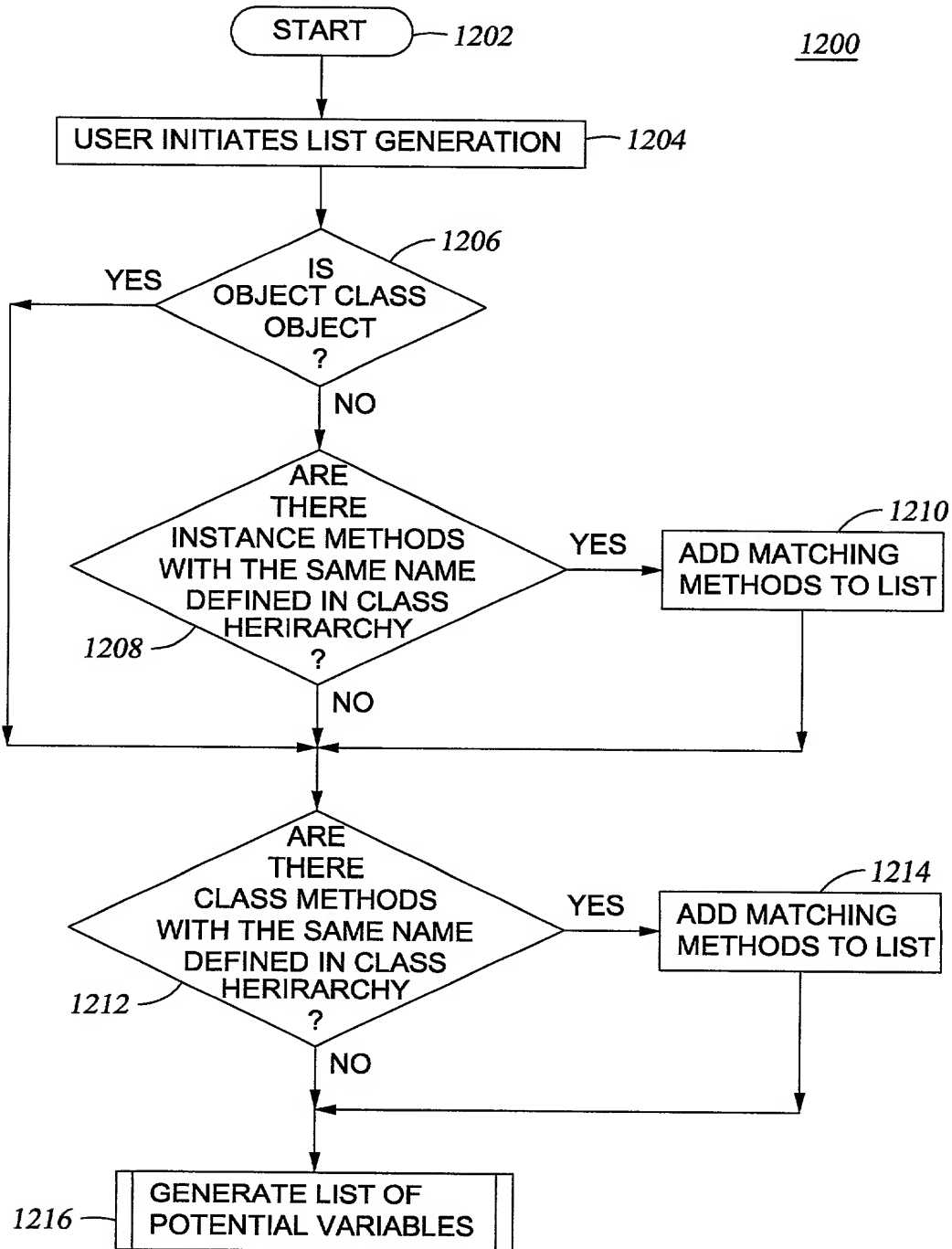


Fig. 12

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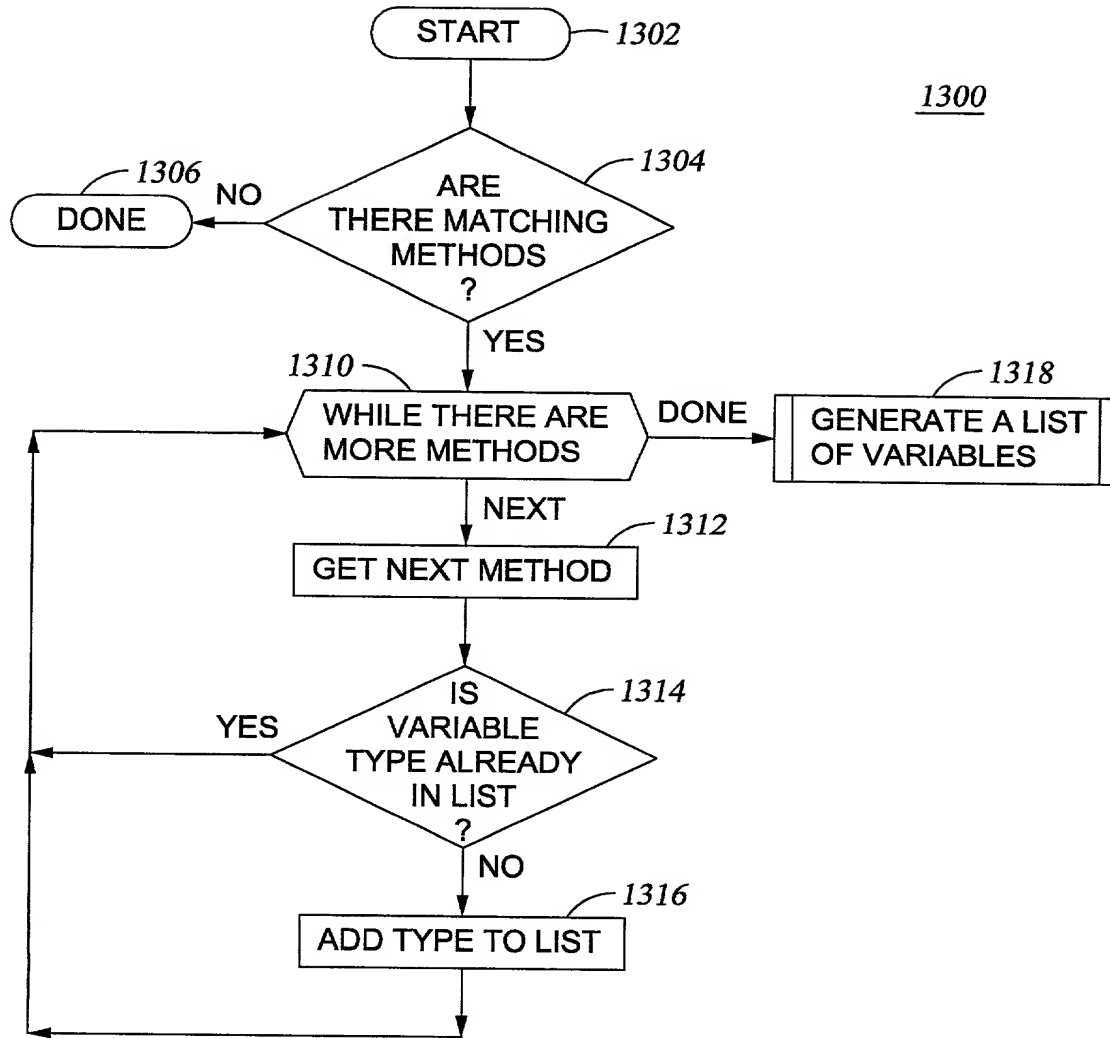
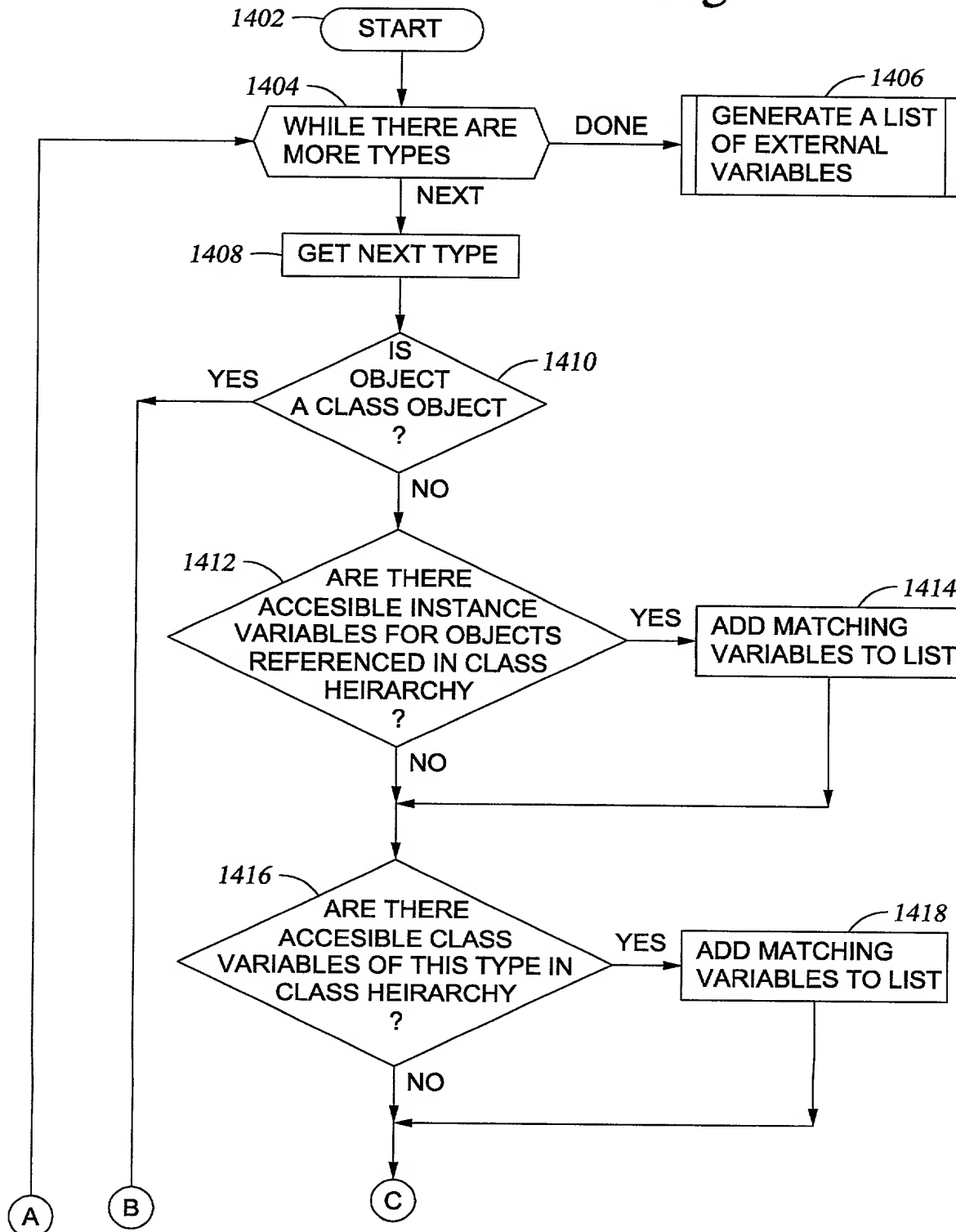


Fig. 13

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Fig. 14A

1400



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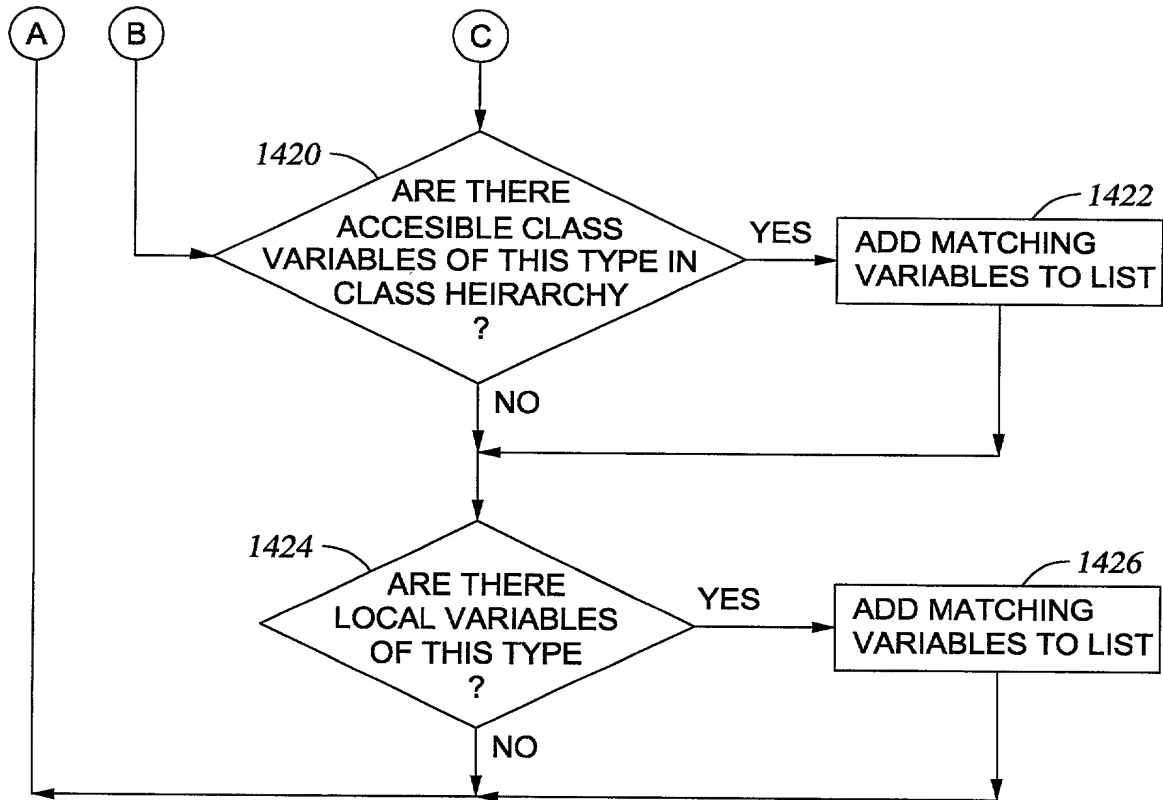


Fig. 14B

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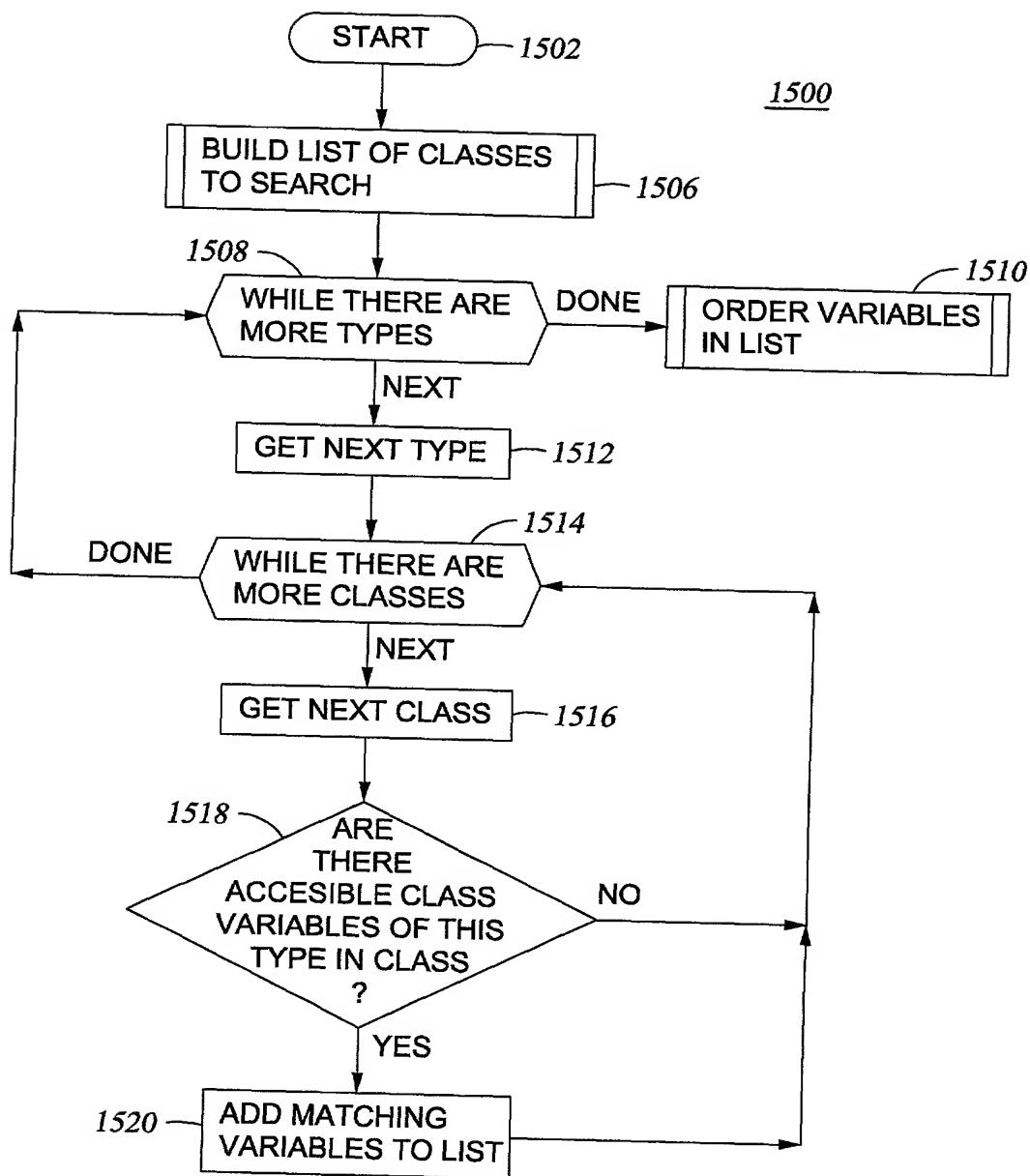


Fig. 15

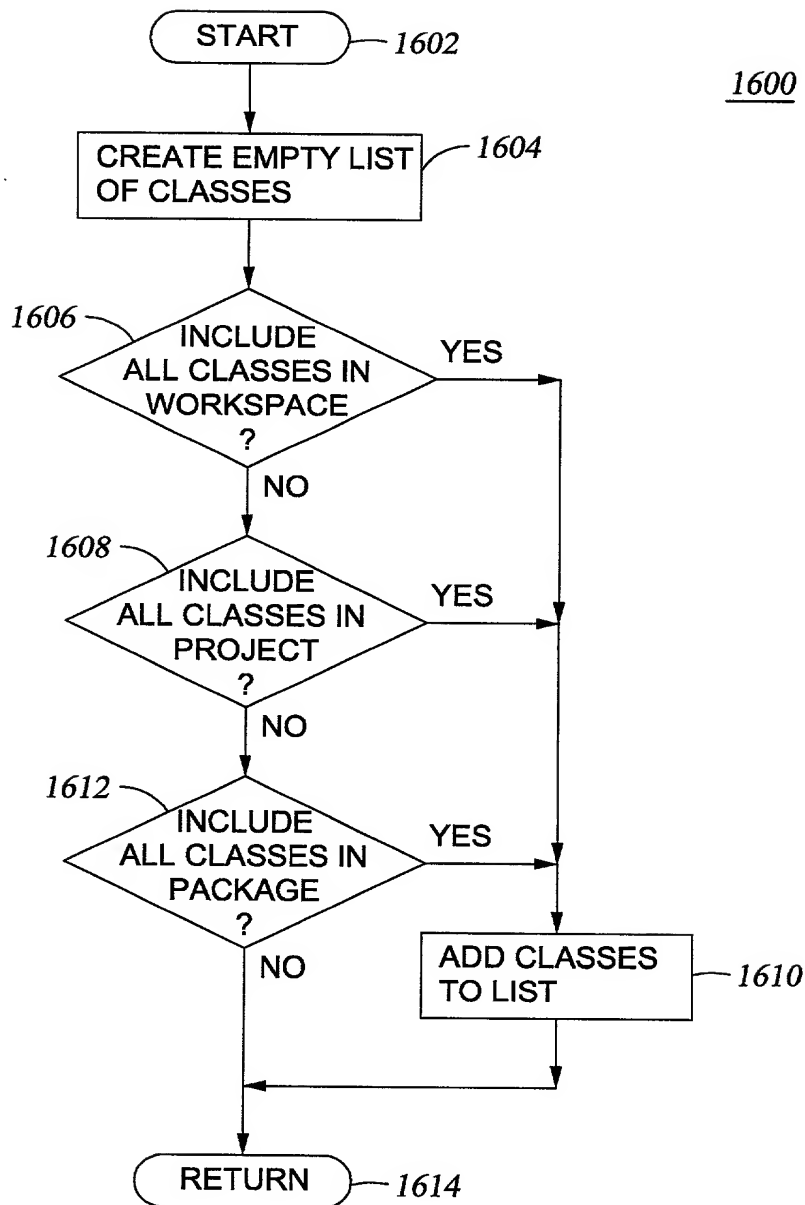


Fig. 16

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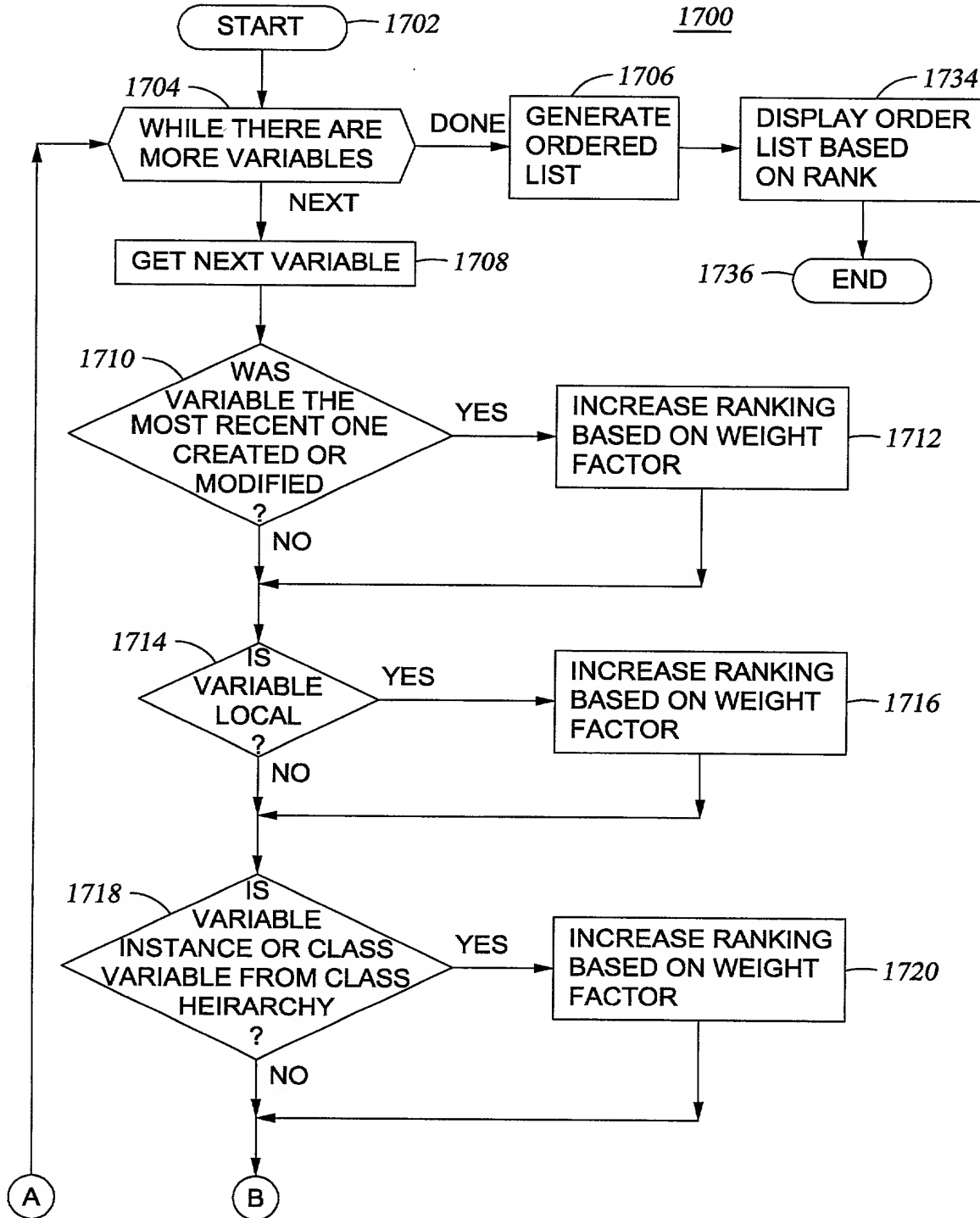


Fig. 17A

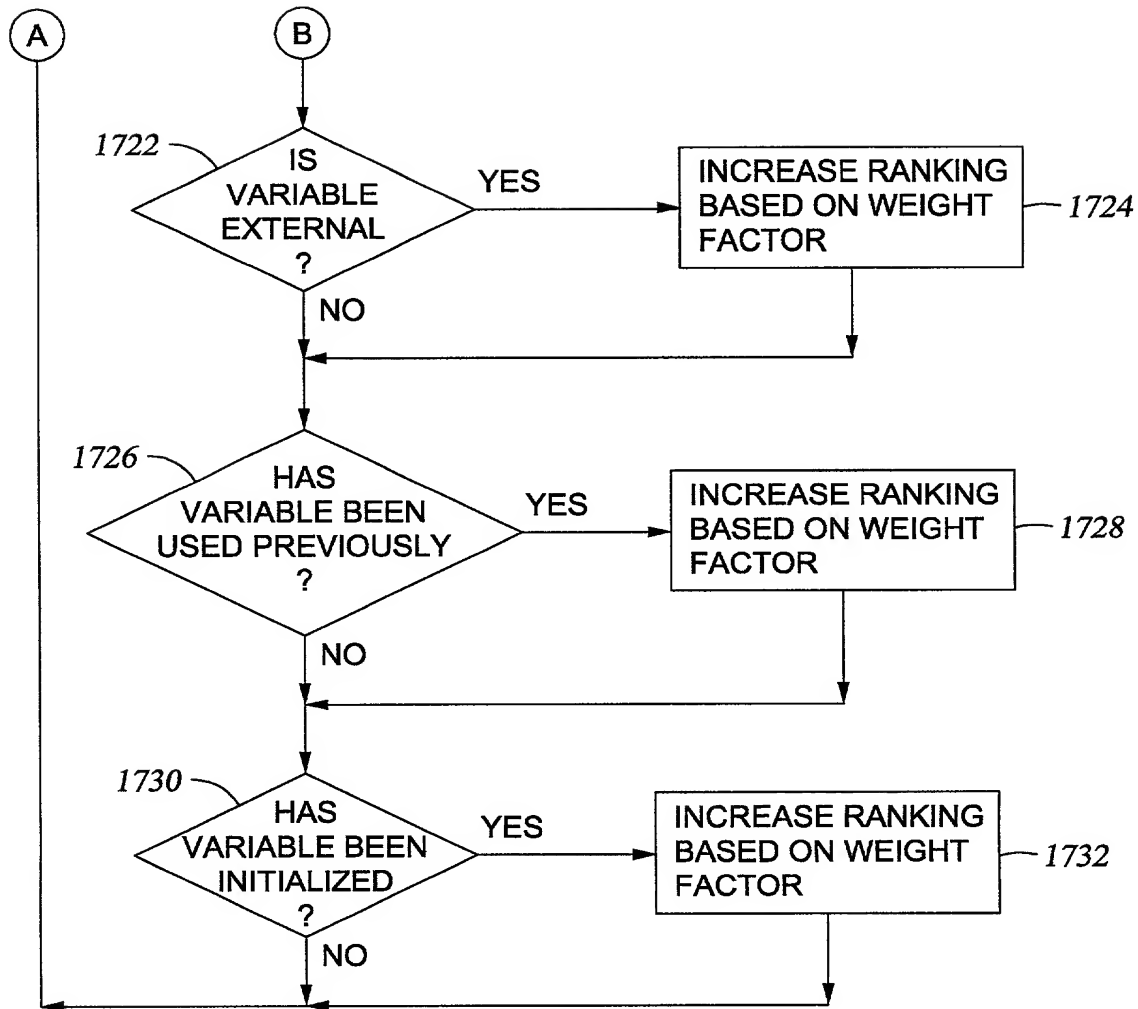


Fig. 17B